UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Engineering

M O N T H L Y N E W S L E T T E R

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I wish to express my appreciation for the spirit of loyalty and cooperation manifested by the Staff under the difficult conditions which have prevailed during the past year. Our Bureau has had many new responsibilities thrust upon it in connection with the Industrial Recovery program, and it is a source of satisfaction to me that these new tasks have been carried on so efficiently and without serious detriment to the regular work of the Bureau. I wish you all a Happy New Year.

S. H. McCrory

L. A. Jones attended the winter meeting of the American Society of Agricultural Engineers held at Chicago, December 5 to 7. The meeting of the Reclamation Section (Dec. 6) was devoted to a round table discussion of Civilian Conservation Work. Messrs. Tschudy, Hamilton and Chambers, employees of the Bureau on E.C.W. work, attended the meeting.

The tabulation and analysis of periods of intense precipitation has been approved as a Civil Works Project, and will be under the supervision of D. L. Yarnell who came to Washington from Iowa City to take charge of it. The job will probably last 2 1/2 months, and 3 engineers, 2 supervisors and about 35 clerks have been employed on the work since December 15. Rainfall records for all sections of the country are to be analyzed. Work to date has been confined to Weather Bureau records, but it is expected that some work will be done on records obtained by State institutions and individuals. All members of the Bureau staff are invited to contribute records of intense precipitation giving the amount, date, and duration of fall. Only records not included in Weather Bureau reports should be submitted. Information as to where such records can be obtained also will be appreciated.

The preparation of plans for draining the Arthurdale farm at Reedsville, West Va. and supervising the work of laying the tile, in charge of F. E. Staebner, is proceeding satisfactorily. This is a project of the Subsistence Homestead Division of the U. S. Department of the Interior. About 275 acres are to be tiled, requiring probably 140,000 feet of tile. A small dragline has been borrowed from the Army engineers for enlarging a creek channel to furnish an outlet ditch. Survey work has been practically completed, tile laying will probably be completed the early part of February and dragline work probably in March.

A drainage survey and plan for the Iberia Experiment Farm of the Bureau of Animal Industry at Jeanerette has been completed by B.O. Childs. After he completes his records in connection with the cane harvest he will lay out the ditches.

P. L. Hopkins has been transferred from Guthrie, Okla. to Temple, Tex. to take charge of engineering experiments on the Blackland Soil Erosion Experiment Station. H. O. Hill, formerly in charge at Temple, has been appointed engineer in the Soil Erosion Service of the Department of the Interior and will be employed in the regional erosion control area located in the Blackland Region of Texas.

V. D. Young, who recently took charge of the engineering work at Zanesville, Ohio, visited the erosion experiment station at La Crosse, Wis.; Clarinda, Ia; and Bethany, Mo. during the latter part of November and first part of December.

According to H. S. Riesbol 28 engineers and foresters engaged in erosion control work by the C.C.C. in the South visited the experiment station at Guthrie and the work of several of the camps in Oklahoma. W. D. Ellison and H. J. Eberly, Regional Forester at New Orleans, were in charge of the party.

The effects of subsoiling on the Hays Soil Erosion Experiment Sta. was very pronounced this year, according to R. R. Drake. The greatest difference in yields occurred on two level terraces with 6-inch vertical spacing the subsoiled level terrace yielded 16 bushels of wheat, per acre and unsubsoiled terrace 10.7 bushels per acre. Subsoiled unterraced land yielded 16.2 bushels per acre as compared with 9.8 bushels per acre on comparable land not subsoiled. Terraced land which originally showed less yield than the unterraced land on moderate slopes is now beginning to yield more than the unterraced land, the yields being about one bushel more per acre on the terraced than on the unterraced land where no subsoiling was done.

R. W. Baird reports that on the Tyler farm a level terrace, 700 feet long and with a spacing of 4 feet, lost 2.15 tons of soil per acre for the period July 1, 1932 to June 30, 1933. During the same period a comparable unterraced area, cultivated and cropped the same, lost 28.26 tons of soil per acre.

The effectiveness of a grain crop such as oats in controlling erosion, when few rains occur outside of the growing season and the land is protected by the crop, is reported by H. O. Hill for an experiment on the erosion farm at Temple, Tex. Soil losses during the year 1932 for three similar terraces planted to corn, oats, and cotton were 0.65 tons 0.5 tons, and 1.43 tons of soil per acre respectively.

W.W. McLaughlin attended the joint meeting of the National Reclamation Association, Western Governors' Conference, and Western States Engineers' Association at Boise, Ida. November 27 to 29. J. C. Marr also attended some of the meetings.

Reports on Lower Rio Grande Valley, Tex. for the Farm Credit Administration(by Messrs. Hutchins, Scobey, Marr, and Faris,)and on Imperial and Coachella valleys, Calif.(by Messrs. Ewing, Blaney, McCormick and Weir) were completed and submitted. The studies were undertaken upon request of the Federal Farm Loan Commissioner, to determine the soundness of Federal Land Bank loans within the areas specified as affected by the quality of the soil, the available water supply, flood control, drainage conditions, permanence and safety of essential physical structures, and the ability to maintain successful irrigated crops. The Texas report contained over 700 pages of text and the Imperial and Coachella valleys report over 400 pages, besides numerous maps.

Flood-control work was started by L. M. Winsor in three C.C.C. camps in Nevada, and six in Utah. Plans were outlined and engineer assistants, one at each camp were given responsibility of making surveys and drawing up detailed plans for further work. In company with State Engineer Malone of Nevada and Regional Engineer Martin of the U. S. Forest Service, Mr. Winsor inspected three Nevada camps and two additional localities where Civil Works projects are contemplated. With Mr. Martin he visited all Utah camps and reviewed all works in progress and projects in contemplation.

In a study to develop a method of ridding a canal of sand where the velocity is too low to use the vortex tube, Messrs. Parshall and Rohwer conducted laboratory tests on a series of gratings made of laths installed in a stream. The gratings proved very effective at low velocities, but a large amount of water was required to keep the discharge tubes from clogging with sand. The tests indicated that where it is possible to eliminate discharge tubes, this device will operate satisfactorily in low-velocity canals.

The problem of the cross transfer of water in lemon trees was investigated by Colin A. Taylor. The conducting paths were studied by chiseling out sections of conducting tissue in a tree and observing the effect on the diurnal change in the size of fruit on the branches affected. Excellent data are being obtained bearing on the irrigation programs in which different portions of the root zone are wetted.

On November 3 Mr. Taylor gave an address on "Water Penetration in Hardpan Citrus Soils" before the meeting of the Pacific Coast Section of the American Society of Agricultural Engineers, in Pomona.

R. B. Gray attended the Chicago meeting of the Power and Machinery section of the A.S.A.E. and gave a brief discussion of the tillage-machinery laboratory to be constructed at Auburn, Ala. Mr. Gray also attended a joint tractor committee meeting composed of A.S.A.E. and S.A.E. members. He also visited the corn-production-machinery project at Ames, Ia., and contacted station officials connected with alcohol fuel investigations. On his return trip to Washington he visited the corn borer station at Toledo.

R.M. Merrill, Chairman of the recently appointed A.S.A.E. Committee on Pest Control by Machinery, gave a report at the Power and Machinery Division meeting in Chicago December 6, pointing out the importance of the problem and how agricultural engineers could and should help. He stated that nearly two billion dollars damage is suffered annually by growers of agricultural products, and that agricultural engineers can greatly aid both by improving performance of present equipment and developing new devices.

An extension, 40 by 55 feet, to the fertilizer-machinery laboratory at Arlington, Va. has been completed under the National Recovery act. One wall 40 feet long was built of dirt for experimental purposes. Space is now available for the shop and experimental equipment on hand, and for an additional air-control room to be used in connection with investigations involving extreme drying conditions.

A Farmers' Bulletin on the placement of fertilizers for various crops is being prepared jointly with the Bureau of Chemistry and Soils.

E.M. Mervine reports that the fertilizer-placement trials on sugar beets this year gave the best results when the fertilizer was placed under the seed, with almost as good results when the fertilizer was placed 1/3 with the seed and 1/3 on either side, and when the fertilizer was placed in bands 1/2 on either side. Significantly poorer results were obtained when all the fertilizer was placed with the seed or when broadcast.

A paper on sugar-beet-machinery development was presented by S. W. McBirney at the Farm Machinery Conference at Davis, Calif. the first of December. He reports that the hill planter recently developed attracted considerable attention.

A paper entitled "Status of the Plow Problem" was prepared by I. F. Reed for the December meeting of the Power and Machinery Division of A.S.A.E. At the same time was shown a motion picture made by Reed and M. L. Nichols of the Alabama Experiment Station. This picture of actual plow operation disproved some of the old theories, one of which was that the shear planes of the furrow slice were not parallel to the moldboard surface but were more nearly to right angles to it.

Claude K. Shedd presented a paper at the A.S.A.E. meeting dealing with a check-wire take-up stake for more accurate planting by 4-row planters.

To aid in the design of the various units of equipment to be used in the tillage-machinery laboratory at Auburn, Ala., J. W. Randolph inspected the force-measuring equipment used in research work of the Navy Department, the Bureau of Standards, and the Langley Field Laboratories of the National Advisory Committee for Aeronautics.

The Division of Mechanical Equipment is cooperating with the Office of Cooperative Extension Work in the preparation of a film strip illustrating the history of some agricultural implements, for use by schools and 4-H Clubs. W. M. Hurst and L. M. Church have been given this assignment.

The construction of a cotton conditioning shed at Stoneville, Miss. for use in connection with the experimental cotton ginning investigations is expected to be completed this month according to Chas. A. Bennett.

A paper entitled "Pressures and Loads in Cribs filled with Ear Corn" by J. R. McCalmont and Wallace Ashby was read by Mr. Ashby at the meeting of the A.S.A.E. in Chicago, December 6.

W. V. Hukill reports that calibration of the sensitive calorimeter for measuring the heat of respiration of fruits and vegetables is about completed. Many difficulties have been encountered due to the extreme accuracy required for measuring temperatures to one one-thousandth of a degree F. The original thermocouple coverings of glass, which were easily broken, have been replaced by thin copper tubing.